Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services

STATEMENT OF BASIS

Lake Charles Manufacturing Complex – Reformer Area – Title V Initial
CCR Vent Control Project
CITGO Petroleum Corporation
Sulphur, Calcasieu Parish, Louisiana
Agency Interest Number: 1250
Activity Number: PER19960004
Draft Permit 2920-V0

I. APPLICANT:

Company:
CITGO Petroleum Corporation
P.O. Box 1562
Lake Charles, LA 70602

Facility:
Reformer Area
4401 Highway 108 South
Sulphur, Calcasieu Parish, Louisiana
Approximate UTM coordinates are 468.50 kilometers East and 3338.50 kilometers North, Zone 15

II. FACILITY AND CURRENT PERMIT STATUS:

Citgo Petroleum Corporation (CITGO) operates a petroleum refinery in Lake Charles, Louisiana. The Lake Charles Manufacturing Complex (LCMC) processes both domestic and foreign crude oils into sulfuric acid, benzene, propane, ethane, sulfur, gasoline, distillate and residual oil, propylene, coke, lube oils and other miscellaneous products. CITGO proposed to consolidate the various state permits with a Title V Consolidated Permit. An Initial Part 70 Consolidated Refinery Operating Permit was submitted by CITGO for the entire refinery complex in October, 1996. At the request of LDEQ, CITGO is submitting multiple operational area permits for the LCMC in order to facilitate the permitting approval process. There will be seven (7) operational area permits in total for the LCMC.

Title V Area	Description
Utilities	Newly created Title V Area including cooling towers, flares, and rental equipment
CLAW	Formerly titled CIT-CON, includes furnaces, storage tanks, flare, and other miscellaneous sources

Thermal	Includes furnaces, powerhouse boilers, Coker I Unit, COP Unit, and other miscellaneous sources
Reformer	Includes furnaces, Coker II Unit, CCR Vent, and other miscellaneous sources
AAT	Includes Sulfur Recovery Units, Tail Gas Units, Acid Plant, Thermal Oxidizer, and other miscellaneous sources
CAT	Includes furnaces, FCCU Vents, and other miscellaneous sources
Logistics	Includes storage tanks, wastewater emissions, marine loading and WWTP flares, and other miscellaneous sources

This submittal is for the proposed **Reformer Area**.

Title V Permit 74-V0, dated December 22, 2004, and the following State approved permits will be completely superseded by this Reformer Area Title V permit and will no longer be applicable once the new operating permit is issued:

- Permit No. 2003 (M-1), dated February 21, 2001. Isomerization Unit.
- Permit No. 2615 (M-2), dated October 24, 2001. Unicracker/C-Reformer Optimization.
- Permit No. 2131, dated April 20, 1992.
- Permit No. 1168-R, dated August 10, 1979. C-Reformer

The following State approved permits will be partially superseded by this Reformer Area Title V permit and will remain active until other sources within these permits are fully covered by area wide Title V permits:

- Permit No. 1594, dated September 9, 2002
- Permit No. 2715-V0, dated December 10, 2001
- Permit No. 2797-V0, dated September 9, 2002.

CITGO Petroleum Corporation submitted timely applications for the initial Part 70 permits and continues to operate pursuant to the "application shield" provided in the program.

In addition, the facility has several state permits that will remain effective until replaced by a Part 70 permit. These include:

Permit #	Units or Sources	Date Issued
72	H-Oil Unit	07/27/71
220	Fuel Oil Conversion	10/30/73
254	Fuel Oil Conversion (1.0% Sulfur)	12/18/73
310	LDPE Expansion	May 1974
311	Reactivation of Deasphalting Unit	05/02/74
456	LDPE Expansion	May 1975
737	Modification-"D" Topping Unit	05/20/77
796	Polyethylene Plant Expansion	09/07/77
1168R	New "C" Reformer and Refinery Modification	08/10/79
1594	New Coker, Unicracker, and Refinery Modification	07/27/81
1770T	Use TAC monitoring sites (alter permit 254)	09/22/82
0520-00016-01	ENCON I Project	11/10/88
2003(M-1)	Isomerization Unit	02/21/01
2131	C Reformer Benzene Recovery	04/20/92
2173	Inert Gas Handling	01/04/93
2204	Steam Enhancement Project	04/22/93
2215	Sour Water Surge Tank (CIT-CON)	09/14/93
2308(M-1)	Cat Feed Hydrotreater	02/21/01
2403	MEK Solvent Dehydration	08/10/96
2595	C Topper/Straight Run PPR	02/12/99
2615(M-1)	C Reformer Optimization Project	10/24/01

Several Part 70 permits addressing portions of the facility have already been issued. These include:

Permit #	Units or Sources	Date Issued
2797-V0	CVEP	09/09/02
2810-V1	Tier 2 – Cat Gasoline Hydrotreaters	10/01/02
2714-V1	Coker I Unit	07/29/03
74-V0	ALCOH Unit	12/22/04
2908-V0	CAT Area	04/28/05
2715-V1	Mixed Xylenes Unit	07/27/05
2796-V3	Logistics Area	09/16/05

Permit #	Units or Sources	Date Issued
2935-V0	AAT Area	10/17/05

Finally, several applications for initial Part 70 permits addressing the remaining portions of the facility are still under review by the department. These include:

Permit #	Units or Sources
2930-V0	Thermal Area
3010-V0	Site Services Area
3009-V0	CLAW Plant

III. PROPOSED PERMIT / PROJECT INFORMATION:

Proposed Permit

A permit application and Emission Inventory Questionnaire was submitted by Citgo Petroleum Corporation on October 1, 1996. A revised application was submitted on December 27, 2004 requesting a Part 70 operating permit. Additional information dated February 29, March 31, June 3, and October 18, 2005, was also received.

A notice requesting public comment on the proposed permit was published in _____, on _____; and _____, Louisiana, on _____. The proposed permit was also sent to EPA Region VI. A public hearing on the proposed permit was held on _____ at the _____, Louisiana.

Project description

The primary objectives of this permit application are to:

- Consolidate and replace existing air emission points
- Identify and reconcile all existing air emission sources
- Obtain an operating permit for air emission controls for the CCR Vent in the C-Reformer Unit to comply with the provision of 40 CFR 63 Subpart UUU, for aromatic projects (Commercial Toluene Side-draw Project and Toluene Concentrate Project), and for the BOH Reactor Renewal Project
- Obtain non-PSD increases in firing rates of process furnaces

- Obtain an air emissions cap for process furnaces

The Reformer Area includes the following process units:

- Three (3) Catalytic Reformer Units (designated as A,B, and C Reformers) – A, B, and C Reformers convert low octane naphtha feed into high octane blending stock for gasoline.
- Delayed Coking Unit (Coker II – a 4 drum delayed coking unit that converts heavy resid feed from Topper (Crude) Units and Vacuum Units into petroleum coke and other petroleum products. Coker II has two main sections: Fractionation and Coking.
- Unicracker Unit – converts heavy feeds into higher value lighter products. The process consists of three main sections: High Pressure Section, Heavy Oil Fractionation, and Light Ends Fractionation
- Two (2) Hydrotreating Units (A-Light Cycle Oil Hydrotreating [ALCOH] Unit and Blend Oil Hydroteating [BOH] Unit) – The ALCOH Unit is a distillate hydrotreater which removes sulfur, nitrogen, and trace metals from several feeds to produce a finished distillate product. The process occurs over a catalyst bed and takes place in two main sections: Reaction and Fractionation. The BOH Unit removes sulfur, nitrogen, and trace metals from sour distillate feeds from the Topper Units and from the Cokers to produce finished products, primarily turbine fuel and intermediate streams. The process takes place in two main sections: Reaction and Fractionation.
- Sulfolane Unit – recovers benzene, toluene, and C8 Aromatics from feed streams made up of reformate from the Reformer units and other aromatic-rich feedstocks (from off site suppliers).
- Amine Treating Unit (Benzene Amine) – removes H_2S from the various fuel gas streams in the Reformer Area
- Isomerization (ISOM) Unit – converts low octane pentanes and hexanes into higher octane iso-pentanes and iso-hexanes for gasoline blending stock. The ISOM Unit has three main sections: Hydrotreating, Liquid/Gas Dryer, and Isomerization Reaction.
- Mixed Xylenes Fractionation Unit – produces aromatic products suitable for petrochemical sales. The unit fractionates the heavy reformate feed into three streams: C7's, mixed xylenes, and C9's.

The Reformer Area contains twenty (20) emission sources from furnaces. All of the furnaces utilize refinery fuel gas as their source. The furnaces in the C-Reformer unit have the ability to burn any combination of refinery fuel gas with internally produced reformer hydrogen.

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Permitted Air Emissions

Estimated changes in permitted emissions from the Reformer Area in tons per year are as follows:

Pollutant	Permitted Before	Permitted After	Permit Change
PM_{10}	213.48	89.69	- 123.79
SO_2	4064.76	467.25	- 3597.51
NO_X	2889.95	1665.59	- 1224.36
CO	552.95	962.08	+ 409.13
VOC	50.02	885.22	+ 835.20
n-Hexane	NS[1]	22.04	+ 22.04
IsoOctane	NS[1]	0.13	+ 0.13
1,3 Butadiene	NS[1]	0.19	+ 0.19
Benzene	NS[1]	20.90	+ 20.90
Toluene	NS[1]	68.74	+ 68.74
Ethyl Benzene	NS[1]	13.79	+ 13.79
Xylene	NS[1]	73.98	+ 73.98
Cumene	NS[1]	0.97	+ 0.97
Naphthalenes	NS[1]	2.44	+ 2.44
Polynuclear aromatic hydrocarbons (PAHs)	NS[1]	0.04	+ 0.04
Phenol	NS[1]	<0.01	< 0.01
Carbon Tetrachloride	NS[1]	2.77	+ 2.77
Ethylene Dichloride	NS[1]	2.49	+ 2.49
Hydrogen Sulfide	NS[1]	11.29	+ 11.29
Ammonia	NS[1]	0.68	+ 0.68
Hydrochloric Acid	NS[1]	9.12	+ 9.12
Chloride Compounds	NS[1]	0.43	+ 0.43

[1] The emissions table was modified to reflect corrected emission factors, updated calculations and speciation of pollutants present but not specified (NS) in previous applications or permitting activities.

Prevention of Significant Deterioration Applicability

The PM_{10}, SO_2, NO_X, CO, and VOC emission increases will not exceed any PSD thresholds. Accordingly, PSD is not applicable to this permit. However, the permit includes previously issued specific conditions (including the application of Best Available Control Technology) from a prior PSD permit (PSD-LA-222) for the C Reformer unit.

Pollutant	Actual Average Emission (tpy) before projects	Proposed Emissions after projects	Project Related Increases (Proposed – Actual) (tpy)	PSD Significance Threshold (tpy)
PM_{10}	13.77	15.12	+ 1.35	25/15
SO_2	64.92	71.27	+ 6.35	40
NO_X	235.36	258.18	+ 22.82	40
CO	152.22	167.10	+14.88	100
VOC	12.01	23.77	+ 11.76	40
HCl	49.45	4.49	- 44.96	NA
Chloride Compounds	3.60	0.43	- 3.17	NA

This application was reviewed for compliance with the Louisiana Part 70 operating permit program, Louisiana Air Quality Regulations, Louisiana Comprehensive TAP Emission Control Program, NSPS, NESHAP, and PSD regulations.

MACT requirements

The Reformer Area is a major source of toxic air pollutants. State Chapter 51 MACT Standards apply. CITGO meets MACT requirements by complying with the Louisiana Refinery MACT Determination through the Louisiana Fugitive Emission

Consolidation program for the project fugitives. Reformer Area meets MACT by complying with 40 CFR 63 Subpart H-HON.

Air Modeling Analysis: None

Impact on air quality from the emission of the proposed unit will be below the National Ambient Air Quality Standards (NAAQS) and the Louisiana Ambient Air Standards (AAS) beyond industrial property.

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to Section VIII of the draft Part 70 permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to Section IX of the draft Part 70 permit.

The applicability of the appropriate regulations is straightforward and provided in the Facility Specific Requirements Section of the draft permit, or where provided, Tables 2, 3 and 4 of the draft permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are provided in the Facility Specific Requirements Section of the draft permit, or where provided, Tables 2, 3 and 4 of the draft permit.

IV. Permit Shields

CITGO requests the following permit shields: Renewal Application, Annual Reporting, and Process Drain.

Renewal Application Shield

If the permittee (CITGO) submits a timely and complete application for renewal, the existing permit will be considered as administratively continued per La. R.S. 30:2023.C. and La. R.S. 49:961.B. In such case, the terms and conditions of this permit shall remain in force until a final permit decision for permit renewal or denial. This protection shall cease to apply if, subsequent to the completeness determination required pursuant to LAC 33:III.519.A, and is required by LAC 33:III.591.B, the applicant fails to submit by the deadline specified in writing by the permitting authority any additional information identified as being needed to process the application.

Annual Reporting Shield

Semi-annual reporting periods required by 40 CFR Part 63 Subpart G (HON) and 40 CFR 63 Subpart CC (MRACT) will be on a calendar basis (January 1 through June 30 and July 1 through December 31) for consistency with Title V reporting schedule as allowed by 40 CFR 63.10(a)(5) and 40 CFR 60.19(c)-(e).

Process Drain Shield

Process drains subject to LAC 33:III.2122 and either 40 CFR 60 Subpart QQQ, 40 CFR Part 61 Subpart FF or 40 CFR Part 63 Subpart CC shall demonstrate compliance with LAC 33:III.2122 by meeting the applicable control, inspection and repair requirements of 40 CFR 60 Subpart QQQ, 40 CFR 61 Subpart FF or 40 CFR Part 53 Subpart CC.

V. Periodic Monitoring

All periodic monitoring is conducted in accordance with state and federal regulations. See the Facility Specific Requirements Section of the draft permit, or where provided, Table 3 of the draft Part 70 permit modification for monitoring requirements.

VI. Applicability and Exemptions of Selected Subject Items

See Table 2 in Section XI. of the Permit.

VII. Streamlined Requirements

Unit or Plant Site	Programs Being Streamlined	Stream Applicability	Overall Most Stringent Program
Reformer Area	40 CFR 63 Subpart H-HON	5% VOHAP	40 CFR 63 Subpart H-HON
	LA Refinery MACT	5% VOHAP	
	LAC 33:III.2122	10% VOC	

VIII. Glossary

Best Available Control Technologies (BACT) – An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under this part which would be emitted from any proposed major stationary source or major modification which the administrative authority, on a case-by-

case basis, taking into account energy, environmental, and economic impacts and other costs

Carbon Monoxide (CO) – A colorless, odorless gas which is an oxide of carbon.

Hydrogen Disulfide (H_2S) - A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the action of acids on metallic sulfides, and is an important chemical reagent.

Maximum Achievable Control Technology (MACT) - The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

New Source Review (NSR) - A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C ("Prevention of Significant Deterioration of Air Quality") and D ("Nonattainment New Source Review").

Nitrogen Oxides (NO_x) - Compounds whose molecules consists of nitrogen and oxygen.

Nonattainment New Source Review (NNSR) - A New Source Review permitting program for major sources in geographic areas that do not meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. Nonattainment NSR is designed to ensure that emissions associated with new or modified sources will be regulated with the goal of improving ambient air quality.

Organic Compound - Any compound of carbon and another element. Examples: Methane (CH_4), Ethane (C_2H_6), Carbon Disulfide (CS_2)

Part 70 Operating Permit- Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: $\geq$ 10 tons per year of any toxic air pollutant; $\geq$ 25 tons of total toxic air pollutants; and $\geq$ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM_{10}- Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) - The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

Sulfur Dioxide (SO_2) – An oxide of sulphur.

Title V permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) - Any organic compound which participates in atmospheric photochemical reactions; that is, any organic compound other than those which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.